Global flooding and La Niña

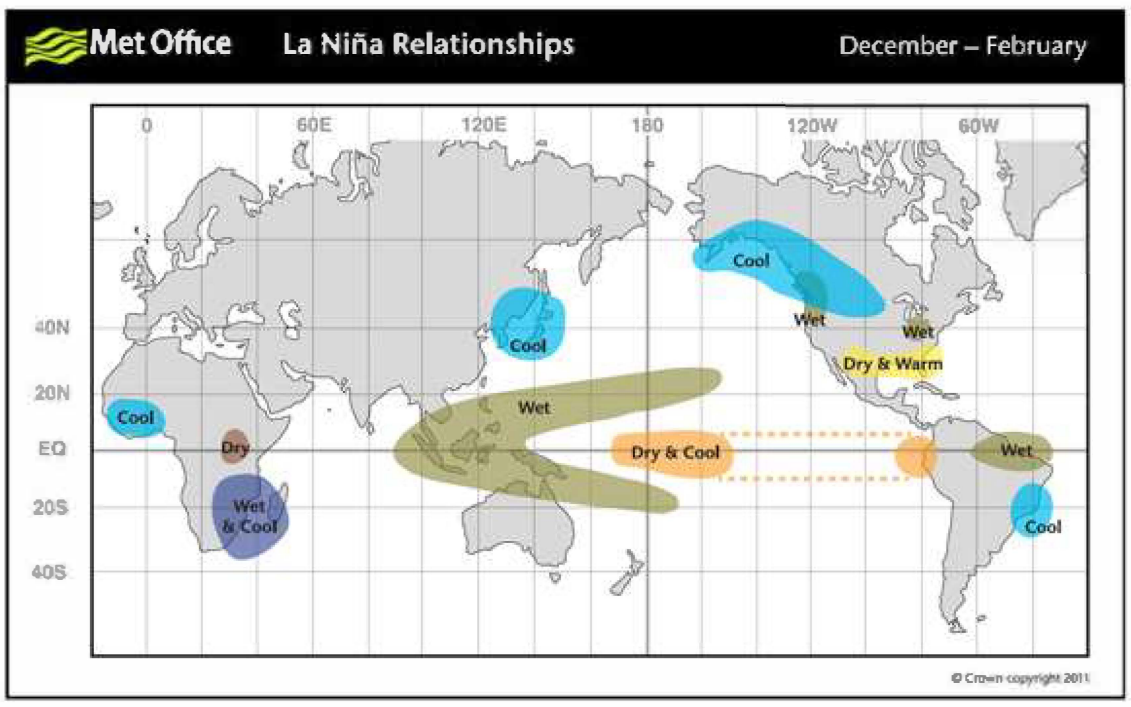
14 January 2011 - In some parts of the world severe flooding is occurring, as very heavy rain and landslides affect regions of Australia, Brazil and much of Sri Lanka.

Some speculation has surrounded the meteorological reasons for the severe weather, these include a near record La Niña event with colder than normal ocean waters in the tropical Pacific Ocean.

For the Australian state of Queensland, there is strong evidence to suggest that La Niña is the main reason for the ongoing widespread flooding. The current floods are also the worst since 1974 - which coincided with the strongest La Niña on record.

Further afield, the links with rainfall patterns and La Niña become more uncertain. In Sri Lanka, historical records show that there is no clear link between La Niña and heavy rain. However, the current La Niña extends further west than usual and this is associated with a westward shift in rainfall patterns in the region. Sri Lanka is on the very western edge of this rain.

Meanwhile, the flooding and landslides in southern parts of Brazil are thought not to be directly associated with La Niña. These extreme conditions can be put down to the variable nature of our global weather patterns.



Dr. Adam Scaife, Senior Climate Scientist at the Met Office, explains some of the science behind La Niña and its impacts on the current severe weather around the globe.

Interview with Dr. Adam Scaife (Youtube video)

La Niña and severe weather around the world (PDF, 89 kB)

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La Nina and severe weather around the world

Adam Scaife – Senior Climate Scientist

What is La Nina?
La Nina is part of a natural climate oscillation in the tropical Pacific. It oscillates between the warm El Nino phase, El Nino is Spanish for 'the boy', and the cold La Nina phase. So La Nina is like the cold little sister phase of this oscillation and it's a purely natural event, occurs every few years as part of this natural oscillation.

Is the flooding in Australia linked to La Nina?
So during La Nina the rainfall that normally falls out over the Pacific shifts west over Indonesia and indeed northern and eastern parts of Australia. So the fact that there's been lots of flooding in Queensland recently is very consistent with the occurrence of near record La Nina this year.

Is the flooding in Sri Lanka and Brazil linked to La Nina?
So La Nina affects weather patterns throughout the globe but of course the further away you are from the La Nina the more difficult it is to pinpoint the affects, it's a bit like waving a long stick, the uncertainty grows the further away you are from the source. And so when we look at remoter regions, like Brazil or Sri Lanka, it's more difficult to attribute the recent flooding events to La Nina. If we take the Brazil case, then when we look in historical records and in our climate models, then southern parts of Brazil are actually dry during La Nina so it would be difficult to attribute the recent flooding near Rio to the La Nina that is going on at the moment. If you go to Sri Lanka that is a little bit more complicated, a little bit less clear because it's right on the edge of the wet influence from La Nina, but again historically it looks like La Nina tends to drive drier conditions in Sri Lanka so the previous biggest event, or the biggest on record in fact in 1974, Sri Lanka was actually dry.

Is La Nina linked to climate change?
La Nina, El Nino cycles have been going on for a very long time, they're natural cycles, they're part of a natural oscillation in the Pacific and indeed when we run our climate models into the future with increasing levels of greenhouse gases then there are no consistent changes in the El Nino, La Nina cycle.